Lower Sixth AL Maths Homework 1 **Name:** _____

1 Simplify fully.

(a) $\sqrt{a^3} \times \sqrt{16a}$ **[2]**

(b) $(4b^6)^{\frac{5}{2}}$ **[2]**

1 Simplify $\dfrac{6\sqrt{3}-4}{8-\sqrt{3}}$, giving your answer in the form $p\sqrt{3}-q$, where p and q are positive rational numbers. **(4 marks)**

1 Solve the simultaneous equations.

$$x^2 + 8x + y^2 = 84$$
$$x - y = 10$$

[4]

8 a Express $x^2 + 14x + 48$ in the form $(x + a)^2 + b$ where a and b are integers. **[2 marks]**

4 Find the coordinates, in terms of a, of the minimum point on the curve $y = x^2 - 5x + a$, where a is a constant.

Fully justify your answer.

[3 marks]

5 The quadratic equation $3x^2 + 4x + (2k - 1) = 0$ has real and distinct roots.

Find the possible values of the constant k

Fully justify your answer.

[4 marks]